

Chemistry I: Matter & Energy

Introduction

Chemistry is defined as _____

Types of Chemistry:

Geochemistry is _____

Biochemistry is _____

Organic Chemistry is _____

Inorganic Chemistry is _____

Matter

Matter is _____

Mass is _____

Volume is _____

Law of Conservation of Matter _____

This law falls apart in _____

Properties of Matter

Properties are _____

Two types of Properties

Physical properties _____

Chemical Properties _____

Examples of physical properties are _____

Changes in Matter

Physical changes are _____

Chemical changes are _____

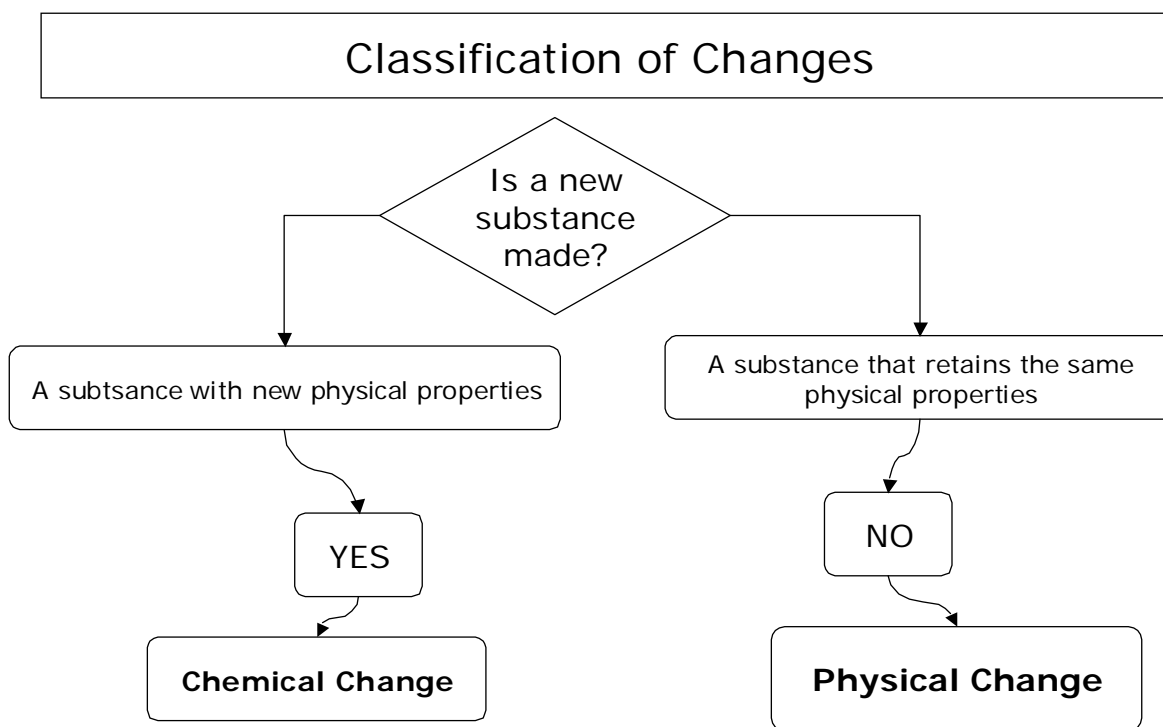
How to determine is a change is a physical or chemical change

■ Now how do you tell the difference?

§ You pose the question: _____

§ If YES then a _____ change has occurred;

§ If NO then a _____ change has occurred.



Evidence of Chemical Changes

1. The production of _____

2. The release of _____
3. The release of _____
4. The release of _____
5. Change in _____
6. The production of _____

Things that promote Chemical Change

1. Addition of a _____

2. Exposure of the reactants to _____
3. applying _____ to the reactants
4. Passing _____ through the reactants
5. Putting the reactants into _____
6. Stirring/agitating the reactants

Reaction tendencies: Chemical changes (reactions) have a tendency to go toward a _____

_____. The majority of chemical reactions in nature tend to be _____

Classification of Matter

Terms

1. Mixture-

a. Any substance that can be taken apart by _____

b. Two or more kinds of matter combined together where each kind of matter retains its _____ properties.

2. Pure substance- any substance that can not be taken apart by _____ means (same stuff throughout)

3. Physical means – _____

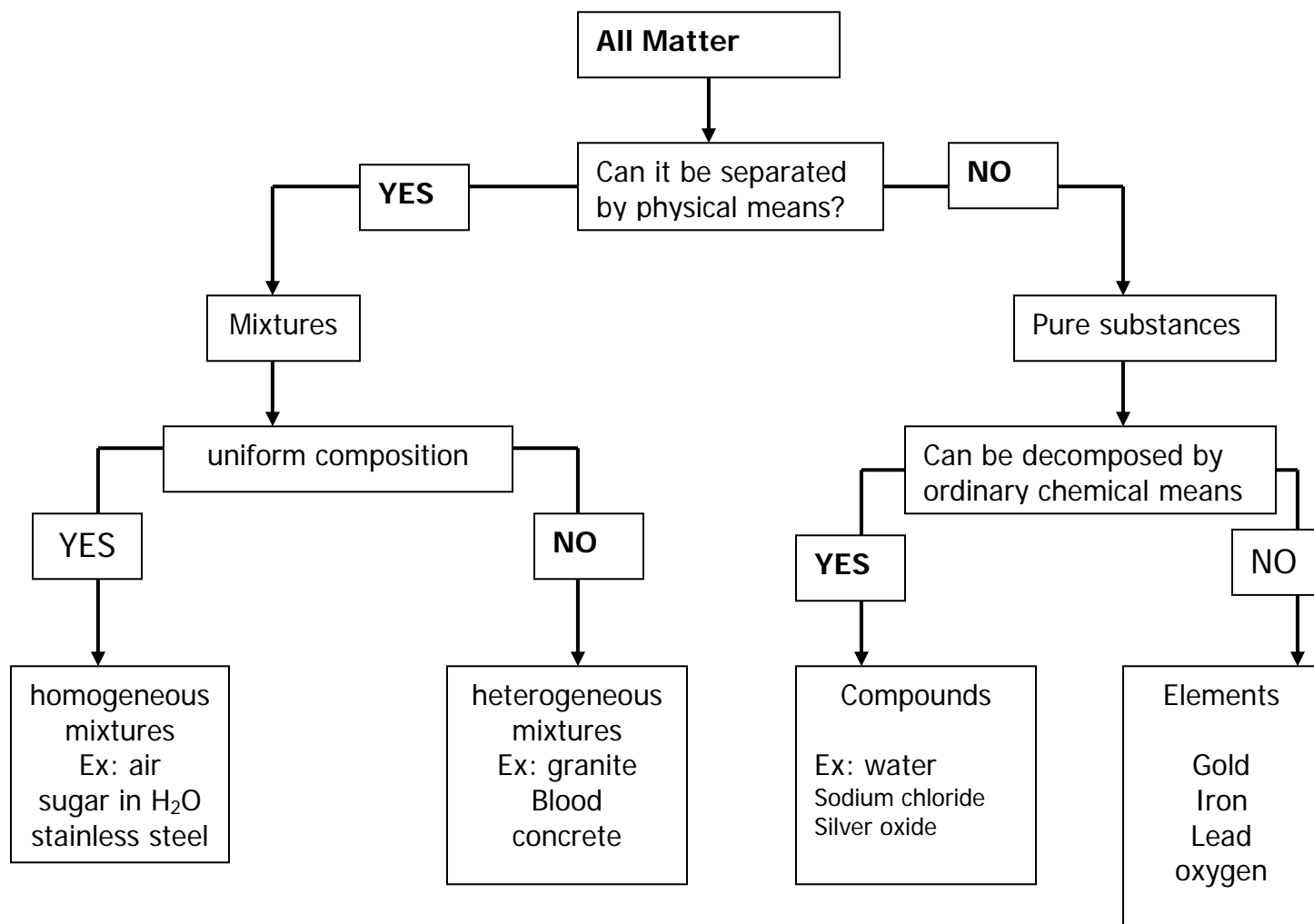
4. Homogeneous mixture (solution) _____

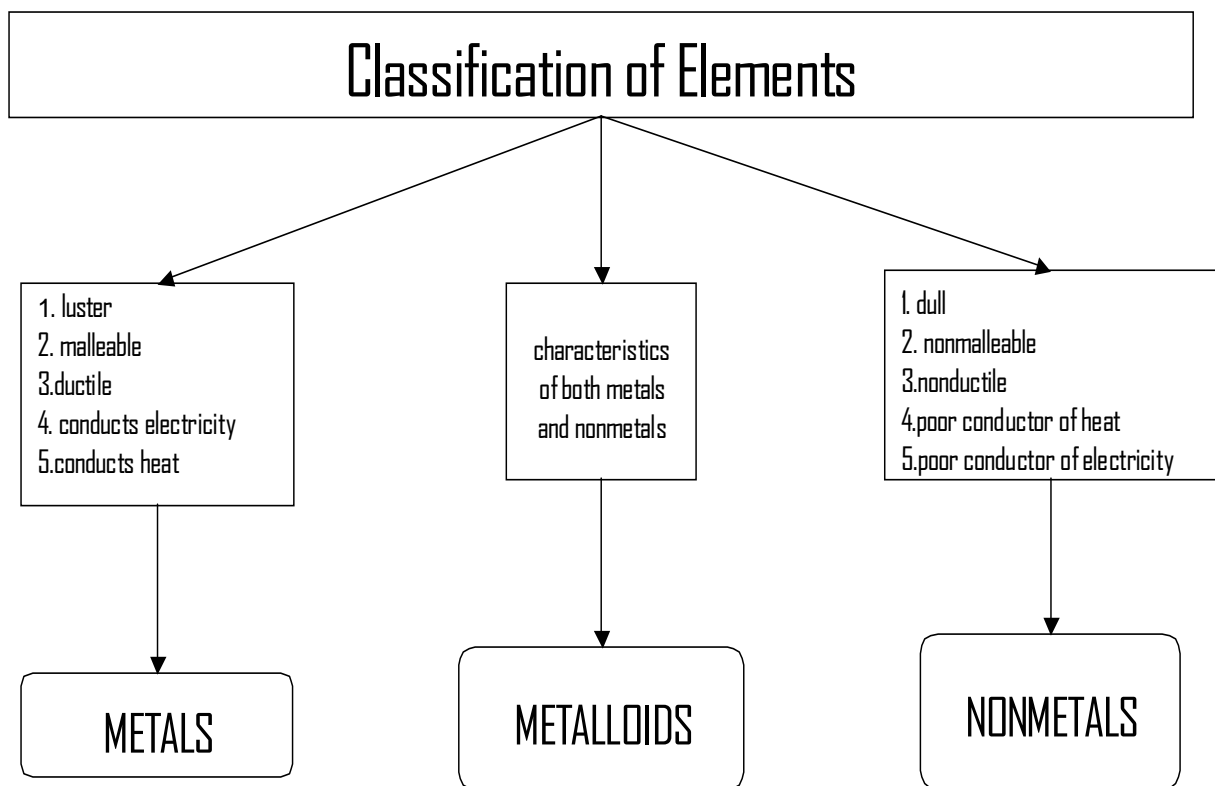
5. Heterogeneous mixture _____

6. Compounds _____

7. Elements- _____

Classification of Matter





The Modern Periodic Table

The known elements have been organized into a chart by _____

In 1951, _____ was awarded the Nobel Prize in chemistry for his work on developing the Modern Periodic Table.

Element 106 has been named _____(Sg) in his honor.

Parts of the Periodic Table

Rows on the Periodic Table are called _____ or _____.

They are numbered _____.

The 112 elements can be divided into 9 separate families or groups.

The columns on the Periodic Table are called _____ or _____.

The columns are numbered _____.

The old system used Roman numerals and letters to denote groups and subgroups.

Metals

Elements in Groups _____ and some under the stair step.

These elements have the characteristics of metals.

Non-Metals

Non-metals are the elements in Groups _____.

The non-metals are in two states of matter at room temperature

1. _____
2. _____

Metalloids

■ Metalloids are the elements found along _____

■ This line is drawn from between _____ and _____
to the border between _____ and _____.

■ Only exception to this is _____ which is considered to be
an "other metal".

■ Metalloids have properties of both metals and non-metals.

■ Metalloids, such as _____ and _____, are semi-
conductors. This property makes metalloids useful in computers and calculators

Noble Gases

The six Noble gases are found in Group _____

These elements are: _____

The noble gases have great difficulty _____

Noble gases are the most _____

Energy and States of Matter

When _____ is added to or taken away from a mass of matter, the matter may change state.

We call these changes _____

The energy that causes these changes is usually _____, which is measured in _____.

Heat in; Heat out

Heat is usually _____ or _____ doing a _____ or _____ change.

Two terms are applied to show which way the heat flows:

Endothermic _____

Example: _____

Exothermic _____

Example: _____

Heat cannot be directly measured. It only can be indirectly measured by changes in temperature

Entropy

Entropy is a _____

_____.

Higher entropy is _____.

Lower entropy less _____

So. Let's make some general statements about energy and entropy.

1. Nature tends to move to _____

2. Add more energy and the degree of entropy will _____
3. Take energy away and the degree of entropy _____